Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1.-40. (Canceled)

41. (Currently Amended) A method for transmitting a signal comprising:

inputting a bit stream;

~~determining a characteristic of a wireless channel;~~

selecting a signal constellation from a plurality of stored signal constellations ~~based on the determined characteristic~~, the selected signal constellation including a plurality of constellation points~~, the plurality of constellation points~~ selected by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points;

converting the input bit stream to symbols based on the selected signal constellation to encode the input bit stream in an amplitude of the symbols;

modulating a carrier wave in phase and amplitude in accordance with the symbols; and

transmitting the modulated carrier wave over [[the]] a wireless channel;

wherein said selecting a signal constellation from a plurality of stored signal constellations is based on an indication of a number of transmit antennas used in transmitting the modulated carrier wave.

42. (Currently Amended) The method of claim 79 [[41]], wherein the characteristic comprises a signal to noise ratio.

43.-44. (Canceled)

45. (Currently Amended) The method of claim 79 [[41]], wherein the characteristic is determined from a signal received over the wireless channel.

46. (Canceled)

47. (Currently Amended) The method of claim 41 [[46]], wherein the number of transmit antennas used in the transmitting is greater than one~~, and is determined from a message received over the wireless channel~~.

48. (Previously Presented) The method of claim 47, wherein the number of transmit antennas is included in a header of the message.

49. (Currently Amended) A device comprising:

a transmitter;

[[an]] at least one antenna coupled to the transmitter for transmitting a signal over a wireless channel;

a processor, coupled to the transmitter;

a computer-readable medium including computer-readable instructions stored therein that, upon execution by the processor, perform operations comprising

~~determining a characteristic of the wireless channel;~~

selecting a signal constellation from a plurality of stored signal constellations based on an indication of a quantity of the at least one antenna ~~based on the determined characteristic~~, the selected signal constellation including a plurality of constellation points~~, the plurality of constellation points~~ selected by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points; and

converting the input bit stream to symbols based on the selected signal constellation to encode the input bit stream in an amplitude of the symbols; and

a modulator having an input coupled to an output of the processor and an output coupled to the antenna, the modulator configured to modulate a carrier wave in phase and amplitude in accordance with the symbols.

50. (Currently Amended) The device of claim 80 [[49]], wherein the characteristic comprises a signal to noise ratio.

51.-52. (Canceled)

53. (Currently Amended) The device of claim 80 [[49]], further comprising a receiver~~, wherein the characteristic is determined from a signal received over the wireless channel at the receiver~~.

54. (Currently Amended) The device of claim 49, wherein the at least one antenna comprises a plurality of transmit antennas~~, and wherein selecting the signal constellation is further based on a number of the plurality of transmit antennas used in transmitting the signal~~.

55. (Previously Presented) The device of claim 54, wherein the number of the plurality of transmit antennas used in transmitting the signal is greater than one, and is determined from a message received over the wireless channel.

56. (Previously Presented) The device of claim 55, wherein the number of the plurality of transmit antennas is included in a header of the message.

57. (Currently Amended) A computer program of computer-readable instructions, tangibly embodied on a computer-readable medium and executable by a digital data processor to perform actions directed toward transmitting a signal, the computer-readable instructions configured to cause a device to:

~~determine a characteristic of a wireless channel;~~

select a signal constellation from a plurality of stored signal constellations ~~based on the determined characteristic~~, the selected signal constellation including a plurality of constellation points~~, the plurality of constellation points~~ selected by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points;

converting an input bit stream to symbols based on the selected signal constellation to encode the input bit stream in an amplitude of the symbols;

modulating a carrier wave in phase and amplitude in accordance with the symbols; and

transmitting the modulated carrier wave over [[the]] a wireless channel;

wherein said selecting a signal constellation from a plurality of stored signal constellations is based on an indication of a number of transmit antennas used in transmitting the modulated carrier wave.

58. (Currently Amended) The computer program of claim 81 [[57]], wherein the characteristic comprises a signal to noise ratio.

59.-60. (Canceled)

61. (Previously Presented) The method of claim 41, wherein the selected signal constellation comprises a plurality of sub-constellations.

62. (Previously Presented) The method of claim 61, wherein the plurality of sub-constellations comprise a plurality of points located on a surface of a plurality of concentric spheres.

63. (Previously Presented) The method of claim 61, wherein the plurality of sub-constellations comprise a plurality of points located at a plurality of latitudes on a surface of a sphere.

64. (Previously Presented) The method of claim 63, wherein the plurality of sub-constellations further comprise a second plurality of points located on a second surface of a second sphere concentric with the sphere.

65. (Previously Presented) The method of claim 61, wherein selecting the plurality of constellation points by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points comprises maximizing a first minimum Kullback-Leibler distance between the plurality of sub-constellations and a second minimum Kullback-Leibler distance between a plurality of points of each sub-constellation.

66. (Previously Presented) The device of claim 49, wherein the selected signal constellation comprises a plurality of sub-constellations.

67. (Previously Presented) The device of claim 66, wherein the plurality of sub-constellations comprise a plurality of points located on a surface of a plurality of concentric spheres.

68. (Previously Presented) The device of claim 66, wherein the plurality of sub-constellations comprise a plurality of points located at a plurality of latitudes on a surface of a sphere.

69. (Previously Presented) The device of claim 68, wherein the plurality of sub-constellations further comprise a second plurality of points located on a second surface of a second sphere concentric with the sphere.

70. (Previously Presented) The device of claim 66, wherein selecting the plurality of constellation points by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points comprises maximizing a first minimum Kullback-Leibler distance between the plurality of sub-constellations and a second minimum Kullback-Leibler distance between a plurality of points of each sub-constellation.

71. (Previously Presented) The computer program of claim 57, wherein the selected signal constellation comprises a plurality of sub-constellations.

72. (Previously Presented) The computer program of claim 71, wherein the plurality of sub-constellations comprise a plurality of points located on a surface of a plurality of concentric spheres.

73. (Previously Presented) The computer program of claim 71, wherein the plurality of sub-constellations comprise a plurality of points located at a plurality of latitudes on a surface of a sphere.

74. (Previously Presented) The computer program of claim 73, wherein the plurality of sub-constellations further comprise a second plurality of points located on a second surface of a second sphere concentric with the sphere.

75. (Previously Presented) The computer program of claim 71, wherein selecting the plurality of constellation points by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points comprises maximizing a first minimum Kullback-Leibler distance between the plurality of sub-constellations and a second minimum Kullback-Leibler distance between a plurality of points of each sub-constellation.

76. (Previously Presented) The method of claim 41, wherein the plurality of stored signal constellations is stored as at least one of a look-up table or an algorithm.

77. (Previously Presented) The device of claim 49, wherein the plurality of stored signal constellations is stored as at least one of a look-up table or an algorithm.

78. (Previously Presented) The computer program of claim 57, wherein the plurality of stored signal constellations is stored as at least one of a look-up table or an algorithm.

79. (New) The method of claim 41, further comprising determining a characteristic of the wireless channel, wherein said selecting a signal constellation from a plurality of stored signal constellations is based on the determined characteristic.

80. (New) The device of claim 49, wherein the computer-readable medium further includes computer-readable instructions stored therein that, upon execution by the processor, perform operations comprising determining a characteristic of the wireless channel.

81. (New) The computer program of claim 57, wherein the computer-readable instructions are further configured to cause a device to determine a characteristic of the wireless channel.